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NO. III.

The celebrated Emerson, in his treatise on the principles of mechanics, observes, I might have given the cuts of many more machines; but what I have already done, may be thought too much, in such a nation as this, where natural knowledge wants due encouragement, and where arts and sciences hang as it were, in suspense, whether they shall stand or fall; and where public spirit and *English* generosity are just expiring. This decline of arts and sciences, is wholly, or in a great measure, owing to the ambition and *most extreme avarice* of the present age. Where men, not being able to lift their eyes above the earth, think nothing worth their care, but raking together the dross it affords, striving, like the toad, who shall die with the most earth in his paws. The duller part of mankind are entirely engaged in the pursuit of filthy lucre: and the brighter sort are wholly devoted to low, trifling, and often barbarous diversions. In such momentous concerns as these, it is no wonder, if arts and sciences flag; and natural knowledge meet with nothing but contempt; and *Minerva* give place to *Plutus*. And indeed, if the general temper and disposition of men had been the same in all ages, as it is in this; I am in doubt, whether we had ever had any such thing as a mill to grind us corn for bread, or a pump to draw us water. It is a trifling excuse for men of exalted station, to urge, that they are unacquainted with such arts or sciences. For learning has always been esteemed to be under the peculiar care and superintendence of the *great;* who ought to protect and encourage both that and the professors of it; or else, arts and sciences can never flourish. And as the encouragement of these evidently tends to the benefit of mankind and the promoting of the public good; nothing can excuse so gross neglect, or such a manifest disregard, as they show, for the happiness of their fellow creatures. The industrious students only have the fatigue, while all the world reap the advantage of their labours.

Scire volunt omnes, mercædem solvere nemo.

JUVENAL.

It is reported of *Alexander the Great*, that he allowed 800 talents a year to Aristotle, to defray the expenses of procuring all sorts of living creatures; so that by his own particular experience, he might be enabled to write of the nature and properties of them. And the reason why the world has so few *Aristotles*, is because there are so few *Alexanders*.

These observations apply, perhaps, with more force to the American people collectively, than those to whom they were immediately addressed. The same ardour for wealth and neglect of scientific pursuits characterise us. It is, indeed, observed, that we are a nation of *readers*; that, as a body, we are more enlightened than any nation in existence. This is no doubt true; but the literary character of a nation depends not upon the mental phantasies engendered by the perusal of airy novels, romantic nonsense or the light essays of an Addison; but on something of a more solid nature. The rage for works of this nature is carried to excess, exceeding, too much, the study of those which would enlarge the sphere of useful knowledge, and place mankind and things in their proper light. The effusions of a crack-brained woman or mad poet, are sought after with great eagerness, while those, destined to be immortal, are neglected or forgotten. Such reading will not benefit individuals nor the community. No thought is engendered, and the mind becomes a mere nothing, serving no other purpose, than to show that a body exists.

To be a nation of frothy readers is to be a nation of frothy thinkers, and individuals, possessed "with the madness of poesy without its inspiration" can never be famed for eminence in the field, the cabinet, or in literature. I would not be understood, as asserting, that no volumes of solid matter are read, nor, that there are no men of science, (nor women whose information is of a solid kind); for there are many who are conspicuous for their attainments in its various departments.

But from whatever cause, it may originate, it is certain, there is not that spirit of scientific inquiry in our nation which there ought to be; a nation, already famed for her martial achievements, and ranked among the happiest, which have ever existed. Individuals there are, but very few in comparison with the great bulk of our countrymen, whose exertions in mineralogy, botany, &c. have exalted them into public estimation, but who have not enhanced the literary reputation of America, nor elicited much talent at home. In these, however, we can enumerate more than in any other department of science. In those of the mathematics, natural philosophy, or chemistry, we can mention but a very limited number, who deserve to be called Mathematicians, Philosophers, or chemists. Of classical literature, and belles letters I do not speak; there are in these many who excel: but I would at the same time observe, that too much attention is bestowed upon what may be termed the *skirts*, viz. the explanations of the folds in a Roman's gown, while the spirit, the elegant diction, and elevation of sentiment, which are to be found in many of the Roman and Grecian writers are wholly unnoti-

ced. I deem this a great defect in our classical grammar schools and colleges.

The reputation of a country depends more upon its men of genius and acquirements than upon its military renown. The exploits of a Leonidas, or the patriotism of a Brutus, are lost in the splendour of Demosthenes' eloquence, and the harmony of Virgil's numbers, and extent of scientific attainments. Cicero is remembered and admired, while those whose delight was the field are forgotten; he enhanced the glory of his native land; the others, indeed, threw a veil around her dyed in blood, which glared for a moment, and was seen no more.

But national reputation cannot be obtained by writings, which as soon as they are read are forgotten: it requires something more, than the halted picture of a gloomy Byron's mind, or the hobbling verse and border nonsense of a Walter Scott. In my opinion, the poetic effusions of those men, have not added much to England's glory, or benefited the language in which they have written. They may be considered hundred year poets; that is, when a hundred years shall have elapsed, their names will be forgotten, and their works found only in the libraries of the curious.

Non more probo; cum carmina lumbrum intrant et tremulo scalpuntur ibi in ima versu.* PERS SAT.

That which exalts the character of a conntry above cotemporaries, and which shall endure to the latest posterity, is genius and industry exerted in great and scientific undertakings. The epic muse may, indeed, lend her aid in establishing and extending the fame of a nation; but it is to the other, we must look for a support and future greatness. A Homer, it is true, might have rendered Greece the theme of eulogy; but her literary celebrity would have been extremely circumscribed, had not a Plato, a Socrates, a Demosthenes, a Euclid or an Aristotle lived.—Portugal boasts of her Camoens; but what is her estimation abroad? A solitary poet or orator cannot raise into notice a land destitute of scientific and learned men. Greece and Rome and Egypt were not indebted for their elevation to the herd of poets and puny writers of the day; but to a bold and glowing genius, animated by the ambition of imperishable renown, exerted upon subjects, which were, afterwards to benefit mankind. In England and France, it is not such men as the poet Laureat, a Sotheby, or a Gifford, but such men, as a Newton, a Lock, an Emerson, a Playfair, a Hutton, a Reid, a Stewart, a La Place, a Lavoisier, a Davy, that have given her a name, which, although, they should be reduced by ambition and conquest, into petty principalities, will, like Athens or Rome, be the theme of panegyric, and visited in future ages, by those who feel a desire to see the spot once dear to learning, science and genius. It is from the performances of such men, that superior advantages are to spring.—It was the bold, the daring mind of a Franklin, a Rittenhouse, a Count Rumford, and a few others, that have given us what literary reputation we possess. British cavillers, or hireling reviewers, attack with diffidence such names; they stand too high to be injured by those malicious and envenomed insinuations which have been liberally vented against American courage, science, genius and moral habits.

That America is a barren country, where no flower rears its head, but it immediately perishes, "where fancy sickens and where genius dies," is an unfounded assertion, set afloat by ignorant or malign travellers, and propagated by those unfriendly to our land. I believe, and evidence is numerous, there is in existence no nation, where there is a greater diversity and versatility of talent, than in America; but it is not roused into action; now, and then, one like a Phœnix appears, displaying the masculine strength of the mental energies of our soil. It wants something to be done to elicit attention and ambition, to excite thought and the powers of the mind. But this can never be done in a retail shop, where tape is measured by the yard, in the counting room, or in a "wholesale store." Business, calculated only to aggrandize one in pecuniary affairs, cannot render the mind liberal; it engenders a mental contraction, as a great writer of antiquity has observed, a degree of rust totally destructive of genius.—"Money indeed, says Polybius, can be possessed by any sort of men whatever; but the virtuous and honourable, and that which rises to praise and glory, is peculiarly the property of the Gods, and of men who approach nearest to them in their nature."

This money making spirit pervades our country; parents place their children in school, and before it can be expected, that they could have received any material benefit from scholastic discipline, they are withdrawn, and initiated into mercantile pursuits. Of mechanics I do not here speak; but of those, whose opulence is adequate to the expenditures necessary in educating their offspring liberally. I do not mean to stigmatize mercantile employments, but I would add, that merchants, who have been educated properly, have from the liberality of their education and dignity of their minds, appeared in the senate and society with peculiar grace and importance. It is indeed lamentable, that men whose fortune is immense, should wish the whole instruction of their sons to consist in a mechanical knowledge of Arithmetic, or in writing a legible hand.

"But I would not be misapprehended. I know the value of a legible and expeditious hand, and the beauty of Arithmetic as a science, as well as its use as a practical qualification. They are absolutely necessary to the merchant; they are highly useful to all. My meaning is, that they should not form the

* The manner is neither good nor respectable, when the verses, or the subjects of them, enter the very marrow and the effeminate, lascivious accents provoke and irritate the inmost sensations.

whole of education, nor even the chief part of it, even when the student is designed for a mercantile life. For what is the proposed end of mercantile life? The accumulation of money. And what is the use of money? To contribute to the enjoyment of life. But is life to be enjoyed with a narrow and unenlightened mind? If it is, what must be the enjoyment? It must be low and disgraceful. A rich man without liberal ideas, and without some share of learning, is an unfit companion for those in the rank to which he is advanced; a melancholy consideration, that after all the cares and toils of business, when a man has acquired a princely fortune, he must be excluded from the society of men of equal condition, but superior education or be ridiculous in it.

"There is time enough for the accomplishment of both purposes, in the course of an education properly conducted, and long enough continued. In our best and most respectable schools, opportunities are offered for acquiring writing, and arithmetic to considerable perfection, together with an elegance of mind. Granting, however, that the two former could not be obtained to the wished-for perfection, yet surely one would abate something, from the excellence of a flourish, for the sake of acquiring ideas, and embellishing the mind with just, generous and noble sentiments. Is it worth while to forego the improvement of taste and literary genius, for the sake of forming a stroke in a letter with greater elegance, though not in the least more legible? for the sake of acquiring a mechanical habit, in which, after all, the scholar will often be surpassed by the lowest apprentice, or the lowest clerk of a petty office?"—To write a fine hand, and cast accounts to admiration, constitute the essence of the education of many rich men's children; and indeed seem to be the ultimate and very desirable wish of many of our fops who strut our streets, known only from the vulgar herd, by their external appearance; a poor recommendation into liberal company.

It is indeed astonishing, that so many of our youth discontinue their Academical studies at so early an age, except those who enter our colleges. They are withdrawn to the circumscribed horizon of the counting house, from which, their minds seldom look. Unaccustomed to attend to mental improvement, arising from multiplicity of business, they scarcely ever endeavour, to make up their deficiency in their after years; which the money-making spirit of their parents, caused them to neglect. It is no doubt, to be attributed, in some measure to this, that so few of our youth, ever rise to an exalted eminence in the paths of literature. Were they continued as long as they ought to be, and if they pursued a course of solid instruction; the languages, philosophical grammar, rhetoric, moral and natural philosophy, mathematics, &c. if the principles of these sciences were unfolded properly, and a literary ambition kindled, the case would be different. Some out of the great multitude, must rise, whose genius, if patronized, would add lustre to their native country. Where genius is not fostered, its exertions will be faint, partial and limited.

Though as an individual, my opinion will go but a little way, yet, I certainly think, that our youth, in general, particularly, of those who can afford to pay for a long and extended education, are taken from school by far too early. And from the system of education now pursued in many scholastic institutions, they can derive but very little improvement. But there are many good schools; and parents should seek them out. Illiterate instructors should be condemned.—If however, children, though continued so short a time at school, as remarked, were made to *think* more than *chant*, they would derive considerable benefit. Memory is employed to the exclusion of jndgment. The treasures of memory indeed will make a *show:* but connected with an unexercised understanding will appear ridiculous. It should be the object of scholastic discipline to improve both. In this consists the great art of education. It is too much the case to suffer youth to learn, as Stewart in his philosophy of the mind, justly terms them, *black scrolls*, to which they attach no idea; to look upon letters as conveying a *sound*, but not as the representative of an *idea*; to let the mind naturally sluggish remain inactive, till by *habit*, it becomes so passive, that scarcely any thing makes an impression upon it; or if so, it is no sooner made, than forgotten. Since such is the case, it is certain something should be done to get persons in the business, capable of attending to the formation of the mind, which, as Stewart observes, requires a pretty accurate knowledge of its laws and operations.

The great object of scholastic discipline is to render the mind patient in inquiry, to elicit thought, strengthen its powers, and quicken its decisions. From these great advantages must accrue in our intercourse with the world. To effect this, however, is somewhat difficult. It depends in a great degree on the capability and exertions of preceptors; and the course of instruction they pursue. Many studies, if properly conducted, tend to this; but there are some preferable to others. Those, in which memory is concerned, but the reasoning faculties still more, such as, grammar, natural philosophy, &c. I presume, will be most conducive to this. Some have recommended classical literature as the most efficacious means, to produce this essential object, and others the mathematics;—but which of them it may be, this science deserves to be cultivated extensively not only as it strengthens the mind, but as it is of such great utility in the practical concerns of life.

The powers of the mind, like those of the body, grow strong and vigorous by exertion; genius unaided dwindles into nothing, or when exerted often excites the asperity of deserved ridicule. To become acquainted with the elements of science and literature

is the first step towards removing the natural rust of mind, unaccustomed to exercise; and by deep investigation and habitual inquiry, we arrive at celebrity and perfection.

To put scholars to those studies, in which they must depend upon their own exertions, to keep them at principles till they become familiar by practice and radicated in the mind, is to strengthen the understanding, and to remove in a great measure that obscurity under which the applications of principles are hid. Until the mind can see clearly, it is liable to many mistakes, because it does not depend on the stability of truth: uncertainty and doubt generate error, and the farther it progresses, the more it is surrounded by new difficulties and perpetual perplexities.

"That the grounds," (observes Bonnycastle) "or fundamental parts of every science are dull and unentertaining, is a complaint universally made, and a truth not to be denied; but, then, what is obtained with difficulty is usually remembered with ease; and what is purchased with pain is possessed with pleasure. The seeds of knowledge are sown in every soil, but it is by proper culture alone, that they are cherished and brought to maturity. A few years of early and assiduous application never fails to procure us the reward of our industry; and who is there, who knows the pleasures and advantages which the sciences afford, that would think his time mispent, or his labours useless? Riches and honours are the gifts of fortune, casually bestowed, or hereditarily received, and are frequently abused by their possessors; but the superiority of wisdom and knowledge is a preeminence of merit which originates with the man, and is the noblest of all distinctions."

"Nature, bountiful and wise in all things, has provided us with an infinite variety of scenes, both for our instruction and entertainment; and, like a kind and indulgent parent, admits all her children to an equal participation of her blessings. But, as the modes, situations and circumstances of life are various, so accident, habit and education have each their predominating influence, and give to every mind its particular bias. Where examples of excellence are wanting, the attempts to attain it are but few; but eminence excites attention, and produces imitation. To raise the curiosity, and to awaken the listless and dormant powers of young minds, we have only to point out to them a valuable acquisition, and the means of obtaining it. The active principles are immediately put into motion, and the certainty of the conquest is insured from a determination to conquer."

Perhaps of all the studies, which tend to produce thought and exercise of mind, none is equal to the Mathematics. It disciplines and invigorates its powers. "It is the *Logic* of the Mathematics which constitutes their principal value, as a part of a course of instruction."* Beginning with a few simple axioms, and postulata, we proceed with certainty from proposition to proposition to the most remote analogies, in a concatenated chain of reasoning, until we arrive at the object proposed. Different from most other studies, the mind is not led astray; for here the student finds no contending hypothises to perplex; no metaphysical niceties to puzzle. By expertness in this science, the mind becomes quick in the collection and disposition of arguments to repel falsehood and refute error; to draw from its own stores, and examine with accuracy and patience before it receives the observations of men, which have been current for ages. Such correctness of thinking, such elevation of thought have been generated by Mathematical studies, that they have superceded in many places of education, those wordy systems of Scholastic logic, under which, ages have groaned, and which are productive of nothing to the students generally, but categories, predicaments and syllogisms; the proper materials of a pedant, and which, indeed, have made many. Too many of our "new fledged Collegians," are apt to imagine, if they can talk about the ten categories of Aristotle, or his manner of syllogizing, and have a little smattering of Latin and Greek, they are "*mighty learned*;" that knowledge consists in these, and that all who are ignorant of them are dunces. Many such must be very often disappointed in their opinions; and buy experience at a dear price. Too many, indeed, are apt to imagine that a *knowledge of words* is learning and science; but let them consult the book of nature with an impartial and unprejudiced eye, and they will find their error. Volumes of Logic have been written, but among all, I doubt, whether a more elegant system of Logic can be found, than Euclid's elements.

It is objected by some, that if persons are habituated to form their habits of arguing and thinking by this science, in the common concerns of life, where absolute certainty is not found, they must often run into error: for here, as Professor Day observes, the "common business of life must be conducted upon probable evidence, and not upon principles which admit of complete demonstration. There would be weight in this objection, if the attention were confined to *pure* mathematics. But when these are connected with the physical sciences, astronomy, chemistry and natural philosophy, the mind has opportunity to exercise its judgement, upon all the various degrees of probability which occur in the concerns of life."

Having noticed its influence in strengthening the mind, as well as enlarging the sphere of its knowledge, we remark, that the practical use of the mathematics

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* Professor Day's system of Mathematics, of Yale College. This system has received the approbation of many of our distinguished Mathematicians, as being one of the best, that has been published to elucidate the principles to those commencing the study. He is simple and lucid.

is very extensive. It is by the help of mathematical principles, astronomers make their observations, regulate the duration of times, seasons, years and cycles, and ascertain the distance of the celestial bodies from each other, and the earth we inhabit. It is by its principles that architects construct buildings; the engineer conducts his works, taking the situations and plans of cities; by it the navigator conducts his vessel over the trackless ocean; in mechanics it is necessary to understand the laws of motion, the composition of forces and the structure of machines; in a word, it is requisite in Optics, in Geography and History.

From what has been said, I would wish it understood that, I think, mathematical studies do not occupy the attention of students a sufficient length of time while under scholastic discipline. To neglect too long, the first principles of geometry is found to be extremely fatal to after improvement. Engaged in various pursuits, as most young people are at 17 or 18 years of age, the mind, cannot but with much difficulty seriously bring itself in contact with this science, unless it has, heretofore, imbibed some taste for it. Mathematics to one, who has not been initiated at all into its principles, will prove too disagreeable and tedious to be pursued for any length of time. The case has been found to be the same, in regard, to the study of languages, and all complex and extensive branches of knowledge. This circumstance occasioned the celebrated Locke to observe, "that the taking a taste of every sort of knowledge is necessary to form the mind, and is the only way to give the understanding its due improvement to the full extent of its capacity."

I think, it will not be denied, that in order to form men who will enhance the literary reputation of our country, well qualified preceptors, and studies, which will enlarge and strengthen the operations of the mind, are absolutely necessary.

W.

THE GLEANER.

NO. I.

To the science of mind, considered merely as a speculative science, plausible objections may be made; but as the knowledge of mind is the knowledge of the most valuable and most unalienable part of our possessions; nay, more, it is the knowledge of a treasure which we may use, or abuse, but for the use or abuse of which we are hereafter to be responsible, it cannot properly be characterised as speculative. Those who are impressed with a deep conviction of their responsibility, will readily acknowledge, that if it can be proved that a knowledge of the various powers and faculties of the human mind may be rendered essentially instrumental in confirming our religious faith and in improving our moral qualities, no science can be put in competition with it, either as interesting or useful.

While the tide of improvement in every art and science runs high, attempts at improving the art of education will be made.—To prevent such attempts I apprehend to be impossible; but to preclude all danger from them, it seems to me essentially necessary to enable parents to judge of their utility, by bringing them to the test of their principles with which all that is wise and practical in education will ultimately be found to correspond.

Why should we not infer, that in education, as in every art and science, the knowledge of first principles is the most effectual preservative against delusion? The parent or preceptor who is either destitute of such knowledge, or, through contempt, rejects the application of it, has no other means of judging of the wisdom or folly, the utility or inutility, of the plans which from time to time are brought into use, but by the slow process of experiment. Should the experiment prove fatal, deeply as he may regret the consequences, he is saved from self-reproach, by the consciousness of good intention. With the same good intention he permits himself to be again deceived by the bold assertions of some other speculatist, who reaps no other fruit from his change of plans, but a change of evils.

As an illustration of this, let us suppose that a chymical projector was, at the present day, to offer to the world a plan for converting a piece of wood into one of the precious metals. With what scorn would his proposal be rejected! So universally is some degree of knowledge concerning the difference between vegetable and metalic substances now diffused, that there is scarcely a peasant who would not be able to detect the absurdity of the impostor's pretensions. But how short a time has elapsed since common sense would have been no sufficient guard against such species of imposition.

If we find any resemblance between these pretenders, and projectors in education, by whose visionary schemes so many are said to have been deluded, we shall be led to conclude, that the same knowledge of leading principles, which now effectually preserve us from being deceived by the specious pretences of enthusiastes of the former description, would preserve us no less effectually from being led astray by the false pretensions of the latter.

The great mass of mankind must ever be precluded from the possibility of acquiring many speculative ideas; but it is only in those nations where bigotry and prejudice have endeavoured to perpetuate darkness, that there is an utter incapacity for discerning truth. In the natural course of things, knowledge, like light, has a tendency to diffuse its rays in all directions. Those who are placed in the least favourable situations will be the last to receive its

beams; but in process of time, they will experience their salutary influence, and rejoice in that light, which, though too faint to fertilize the soil, they find sufficient to direct their steps.

There seems no good reason for affirming that the science of mind differs materially from other sciences. But should prejudice retard its progress, the interest of society, as these embrace the improvements of the rising generation, must inevitably suffer. Those to whom the conduct of education is entrusted, whether parents or preceptors, will remain liable to fall into one or the other of the following errors:—Either, by adhering to established forms and plans, after the circumstances in which these originated have undergone material change, or they will disqualify their children for taking their place in the society in which they are to live, by being directed solely by the example of their neighbours, and implicitly relying on the power of chance, or nature, or contingent circumstances, for making their children as wise and good as the children of others, which will expose them to the dominion of every prejudice, vice, or folly, which prevails in the society in which they happen to be thrown.

It is from the ignorant that empirics of every description reap their golden harvest. A good education,—an excellent education,—a complete education,—are terms with which the ear is so familiar, that to insinuate a doubt concerning the accuracy of the ideas they convey, will, to many, seem unreasonable or absurd. Let us, however, put the matter to the test, by asking the first ten persons with whom we have an opportunity of conversing, to give a definition of these several terms; and we shall probably find, that no two persons in the number specified have attached to these terms ideas exactly similar. But however they may disagree, as to the number and nature of the accomplishments which they associate with the idea of a good, an excellent, or a complete education, we shall find that not only, not one of the ten, but perhaps not one of a thousand, connects with the idea of education, even when pronounced superlative, any notion of the general improvement of the faculties of the human mind, the regulation of the passions, or the cultivation of the affections. I do not say, that these are by so large a portion of mankind considered as unworthy of attention, but that, in speaking of education, they are not considered as the great, the primary objects of attention; and that education is not pronounced *good*, nor *excellent*, nor *complete*, in proportion as it has tended to exercise and invigorate all the faculties of the soul, and all the affections of the heart, but as it has impressed upon the memory a certain number of facts, and of words descriptive of the ideas or opinions of the wise and learned, and produced a facility in the performance of certain external acts, and in the pronunciaton of certain sounds. Now, though there can be no doubt, that, in the course of these various exercises of memory, a number of ideas must necessarily have been conveyed to the mind, it is by no means clear, that the instruction given has had any tendency to improve all the intellectual faculties, or to cultivate the affections; all of which circumstances ought, according to my view of the subject, to enter into our definition of the terms *excellent* or *complete*, when applied to education.

Justly may we call that a good education, which tends to develop and bring into action those faculties that are most essentially requisite in conducting the ordinary business of life, and at the same time gives such a direction to the active principles of our nature, as is essential to the happiness of the individual and of society. A good education may, according to this definition, be the privilege of a peasant as well as of a prince; nor is the cultivation of the primary faculties of the mind more essentially necessary to the latter than to the former.

A.

REVIEW OF BOOKS.

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"INTRODUCTION TO GREEK PROSODY in three parts, with an appendix on the metres of Horace, adapted to the use of beginners, by P. Wilson, LL. D. Professor of the Greek and Latin languages, &c. in Columbia College," Printed July 1811, by T. & J. Swords, and sold by them at No. 160 Pearl-street, New-York, containing 244 pages, duodecimo.

About a year previous to the publication of this volume, the learned author prepared a small tract in 24 pages, entitled "Rules of Prosody for the use of schools." These he intended as a guide for initiating young students in prosody; but did not, at that time, deem it expedient, to take notice of the particular kinds of verse, or to enter into the subject at large; but he promised in his preface, that, at a future period, a more complete work would make its appearance, which might be deemed worthy of the attention of those, who were more advanced in the study of the ancient poets. To this little tract is, likewise, annexed a list of the Greek prepositions, which, though comprised in two pages, will prove a most valuable acquisition to those, who wish to attain an accurate knowledge of that ancient and elegant language. Certain prepositions in the Greek, as well as in the Latin, govern different cases, and according to the particular case, which any of these prepositions governs, the meaning varies. They, likewise, in general, assume a new signification, when in composition with other words.

To beginners, the attainment of a thorough knowledge of the several uses of these prepositions has long

been a matter of perplexity; but Doctor Wilson has arranged them in a manner so concise and perspicuous, that he who has acquired a tolerable knowledge of the grammar, and read a few chapters in any of the easy Greek authors, may in a short time obviate a difficulty, which had heretofore been deemed almost insuperable.

We now come to the work, which the Doctor had promised as a sequel to this tract, viz. his "Introduction to Greek Prosody," &c. and in which he has displayed uncommon assiduity as well as erudition.

To enter, however, into a critical examination of the different parts of this elaborate performance, would not comport with the nature of our work. We shall, therefore, confine ourselves to few observations.

The venerable author has been a teacher of the classics in this country since the year 1765, during which period, he has taught with success almost unparalleled, a number of years, at Hackinsack, in the state of New-Jersey, some part of the time as president of the academy at Flattbush, on Long Island, and, for the last thirty years, he has filled the chair of professor of the Greek and Latin languages in Columbia College, in this city. Wherever he has been engaged in this arduous,but trulyhonourable employment, he has exerted himself to the utmost in promoting, in every respect, the best interests of his pupils.

Under these circumstances, and when we know, that Doctor Wilson has devoted most of his leisure hours to study, during his long life, that he is possessed of excellent natural talents, highly cultivated by an early education, and that it has ever been his most ardent desire, that those placed under his care, should learn nothing by halves; but, on the other hand, become well acquainted, with the different branches of education, to which, from time to time, their attention was directed, it is not surprising, that he should have been able to write so good a treatise on Greek prosody.

Our author says in his preface. "This treatise is the result of necessity, not the offspring of choice. The candidates for the Freshman class in Columbia College were enjoined to render themselves masters of Greek prosody, previous to admission. This regulation could not be complied with, unless the teachers were furnished with the means of preparation. To answer this purpose, the treatise was composed. The subject is encumbered with difficulties, which have never been clearly and fully elucidated;" he might have added "*till now.*"

To this we may add, that the definitions and rules are expressed in so conspicuous a manner, that a youth of tolerable abilities, may make himself acquainted with Greek prosody, with little or no assistance from his tutor. We are, therefore, induced to wish, that this treatise, which has long been a *desideratum*, may be used by those, who are preparing to enter our Colleges, or engaged in the study of the ancient writers.

The appendix, which contains "*an arrangement of the different species of verse used by* Horace, under *their several heads,*" will be found equally useful as any section in the preceding part of the book. The metres in Horace are more different from each other than those of any other Roman author, and he, who properly understands the scanning of each of them, will be at no loss to comprehend the quantity, and the number of feet, &c. in every species of Latin verse. In explaining this intricate subject, our author has so simplified what before was deemed extremely difficult, that the diligent votary of science, will find his road to Parnassus comparatively easy.

In our next number, we shall take notice of some of the other literary labours of this veteran in the paths of science.

THE EPISTOLARY GUIDE, containing models of Juvenile letters, on familiar subjects, with topics for the exercise of youth, also forms of orders, agreements, bills, &c. with observations on commercial letters, to which is added a dissertation on epistolary correspondence, with some easy and practical rules, necessary to be observed by those, who wish to acquire a facility in that kind of composition. For the use of schools, by James Hardie, A. M. author of the principles of the Latin Grammar, the Cordery, Selectæ e Veteri, Viri Romæ, with improvements, &c.

We find in this volume such principles as ought to be impressd on the minds of young people, enjoining in a plain and easy style, obedience to parents and teachers, pointing out the utilily of learning, the necessity of industry and attention to study, and the beneficial effects which will result to youth, in their progress through life, by forming correct habits in their early years.

"The various works," says Mr. Hardie "called *complete letter writers* are well known for the grossness of their matter, as well as the vulgarity of their manner. A book called *Elegant Epistles* is any thing but a collection of letters adapted to the business of life, much less for the use of those who are at schools and other seminaries of learning. Even a volume of essays would answer a better purpose; because it would not mislead by pretending to exhibit models of juvenile letters."—We deem these models of letters of a different cast from those which we have often seen; and believe, that the author has inserted none, which may not be subservient to the cause of virtue and morality. Were the sentiments contained in them deeply impressed on the minds of young poeple, they might have the most happy effects on their lives and conversation.

In speaking of models of letters designed for youth, he very properly observes; that "the topics of juvenile letters ought to be such, as may be most compatible with the understanding of those for whose use they are intended. To ask a boy or young lady

of 12 or 14 years of age to write an essay upon any abstruse subject is certainly one of the greatest absurdities; yet this is an error, which is too common, and is productive of the most dangerous consequences, as it tends to give to the pupil a dislike to epistolary correspondence of any kind. The topics, should, therefore, be *juvenile* and natural; but the expressions should have the *correctness* of maturity, still retaining the ease and *vivacity* of youth.—" We consider this last period, as applying with considerable force to the Epistolary guide.

The nature of our work precludes our extracting more passages from this volume, which contains many sensible remarks, and may be made of much benefit to scholars, under a judicious instructor.

Kirk & Merceine, No. 22 Wall-street, have just published THE EMIGRANTS GUIDE, to the Western and Southwestern States and Territories, comprising a geographical and statistical description of Louisiana, Mississippi, Tennessee, Kentucky and Ohio: the Territories of Alabama, Missouri, Illinois, and Michican; and the western parts of Virginia, Pennsylvania, and New-York. With a complete list of the Road and River routes, west of the Alleghany mountains, and the connecting roads from New-York, Philadelphia, and Washington city, to New-Orleans, St. Louis, and Pittsburgh. The whole comprising a more comprehensive account of the soil, productions, Climate and present state of improvement of the regions described, than any work hitherto published. By William Darby, member of the New-York Historical Society, and author of a map and Statistical account of the state of Louisiana and the adjacent regions.

We have only room to observe, that this work is executed with much accuracy and great judgment, It will be a very valuable guide to those for whom it is intended, and impart much useful geographical and statistical information to those who are fond of these sciences. In our next number, we shall, probably, enter into a detail of its features and merits.

PHILOLOGICAL DEPARTMENT.

GRAMMAR: *Continued from page 7.*

CHAP. II.

The General Nature of Sentences.

ACCORDING to the author of the Diversions of Purley, two parts of speech are necessary to language, the noun and the verb, and every sentence must contain both. The reason assigned for this is, that one part of speech is required as the sign of the idea, and another as the instrument of communication. The views which this author entertained of the characteristic nature of the verb, and the act of communication as distinct from the exhibition of the signs of ideas, are not fully developed in his writings. We have not, therefore, sufficient data for appreciating their merits. The opinion maintained by some of his most acute followers is, that affirmation is the proper character of all sentences. This is considered as closely connected with the doctrine which makes the object of language to consist in the communication of our thoughts; and by this communication seems to be understood, the act of conveying to our neighbours the same connections betwixt ideas, (formerly known to both,) which they possess in our own minds. This conveyance and the act of affirmation, are reckoned equivalent. Affirmation, from *ad firmare*, means the establishing of a connection betwixt one idea and another. The doctrine which resolves language into assertion does not depend on the truth of the theory. that its object is the communication of our thoughts. Our readers will perhaps agree with us in denying that sentences intended to deceive are communications of the thoughts of the speaker. It must, however, be allowed by all, that these sentences are assertions, and the inquiry still remains open, whether or not assertion is the proper character of sentences? To this inquiry the present chapter is devoted.

A sentence of assertion includes two ideas expressed by two signs, and another sign to indicate the affirmation, or the establishment of their mutual connection. In the sentence " man is rational," " man" expresses one idea, the first two syllables of the word " rational" another, and the last syllable of " rational" along with the word " is" constitutes a sign expressing the connection betwixt the two. These different signs are not always expressed in separate words. Sometimes two of them are contained in one, as in the last word of the sentence " John walks." Sometimes all the three are contained in a single one, as in the Latin word *loquitur*, for " he speaks; or *rubet*, for " he is red."

On a full consideration, however, of the variety of arrangement which words assume in the use of language, and the various kinds of words employed, assertion does not appear essential to it. We may produce thought without making any assertion. We may, for instance, merely call the attention of another person to an object formerly known to him. A very extensive department in the uses to which it is applied is that of exciting the person addressed to the performance of voluntary acts. This is done by *Imperatives*, which certainly differ from assertions. Attempts have indeed been made to reduce them under this head, and to regard them in the same light with those affirmations in which an abbreviation is produced by condensing a plurality of signs into one. This attempt succeeds in so far as it appears to establish a fact, that, according to the habits of speaking and understanding one another which we now possess, the same meaning may be conveyed by an affirmation and by an imperative

sentence. The sentence, *I nunc et versus tecum meditare canoros*, is of the same import with the affirmative sentence, *Jubeo te nunc ire et tecum meditari versus canoros*. But the question recurs, which of these modes of expression is likely to have been the original one in the contrivance of words?

We formerly observed that the contrivances of language are founded on the known relations existing, on different occasions, betwixt the speaker and the person addressed, and are so adapted as to enable the former to avail himself of these relations for accomplishing some definite purpose. An answer to the inquiry, what forms of sentences are likely to be the earliest and the simplest, is not obtained by determining what connections of thoughts are simplest in relation to the mind of the solitary individual, but by finding what those purposes are which he is likely soonest to have in view in employing the influence which language gives him over others.

The first objects that strike the attention of man in becoming acquainted with his fellows are their motions. In other respects, one man is not more interesting to another than any piece of dead unchangeable matter. He first observes voluntary motions of the most palpable kind, and then gradually becomes acquainted with more delicate phenomena, such as the motions and changes of the human countenance, from which he infers the existence of thoughts in other persons, and judges of their nature. In acquiring this knowledge, he is guided by experience, and by a comparison betwixt the motions of others and those of which he is conscious, as the natural accompaniments of his own thoughts.

The helplessness of man as an individual, and the support which he is capable of deriving from the services of his fellows, create perpetual occasions on which he wishes for their assistance; and one of the earliest as well as the most frequent objects of his wishes is, to influence them to perform those motions for which he finds occasion. These necessities are prior to the mere luxury of a mutual communication of knowledge and opinion. This fact seems to point out imperative sentences as the earliest forms of language.

On this account, it is not historically correct to consider the imperatives *I*, *veni*, *fac*, and *dic*, as brief modes invented in the progress of language for expressing thoughts originally conveyed by means of such affirmative sentences as *jubeo*, or *precor te ire*, *venire*, *facere*, and *dicere*. The act of commanding, or requesting, does not require to be mentioned. It is actually exhibited. *Jubeo te ire* is something more than *I*. It is a pleonasm in the form of an affirmative sentence; and has the same relation to this imperative which the sentence "I affirm that man is mortal," has to the shorter one, "Man is mortal." When we speak, there is no meaning in affirming that we speak; and in like manner, when we give a command, or make a request, there is no meaning in telling that we do so, unless we intend to enforce a compliance with our wishes by an additional idea contained in the verb prefixed, as by addressing ourselves particularly to the fears of another in the verb *jubeo*, or to his kindness in the verb *precor*. A command ought, in strict propriety, to be given, before it can become the subject of an affirmation.

As the imperative is an immediate consequence of our wishes, advantage might be taken of that circumstance to represent it as an "assertion that such wishes exist." But the circumstance of being the consequence of our wishes is common to it with all our actions, as well as all our words. It is rather, however, to be considered as an execution of our wishes, than an assertion of their existence. It is a call of attention; a mode of influencing the volitions of other persons, and thus producing, on their part certain trains of action.

In corroboration of this view of the subject, we find that words signifying voluntary motion exist in the shortest form in the imperative of the verb. This is the case in all the languages, ancient and modern, which we have had access to examine. Exemplifications of this in the Latin language are afforded in the words already named, *I*, *veni*, *fac*, *dic*, and *duc*; or the common examples of the conjugations in elementary grammars, *ama*, *doce*, *lege*, *audi*. The same comparitive brevity takes place in the English language, as in the words, "go," "come," "do," "say," "bring," "love," "teach," "read," and "hear," which never stand by themselves except in the imperative mood. Even when the idea expressed by any verb, in either language, is introduced as an object regarding which an assertion is to be made, the word employed is longer than the imperative. In Latin, the syllable *re* is in this case added to those which constitute the imperative. From *ama* we have *ama*-RE, and from the other imperatives, *doce*-RE, *lege*-RE, and *audi*-RE; also, *i*-RE, *veni*-RE, *dic*-ERE, *fac*-ERE, *duc*-ERE. In English, we prefix the word TO, or add the syllable ING; as, "*To* read, or read-*ing*, is an improving occupation." "Men of intellectual refinement delight in read-*ing* or delight *to* read." In some instances, the word is equally short in its application to other uses as in the imperative. Of this the noun "love" is an example, being equally short, and indeed the same word, with the imperative of the corresponding verb. Such instances, however, are rare. Brevity, therefore, appears to be an original character of imperatives; a circumstance conformable with the theory, that they ought to be considered as original modes of speech, and not as abbreviations of affirmative sentences. The affirmative form, instead of

illustrating the imperative mood, renders it cumbersome, and destroys its characteristic animation.

To those who have not previously considered this subject, the brevity of imperatives may appear, in point of fact, liable to some exceptions. The Chinese language is said to have no imperatives. That language, however, in so far as we can judge from our scanty knowledge of its structure, seems to owe this apparent defect to affectation and refinement, which have induced men in speaking to prepare the hearer by means of distant and respectful circumlocutions, in stead of using direct imperatives, in order to avoid the apprehended indelicacy of dictating an abrupt change of direction to his thoughts. This modification probably took place after men had learned to keep their own objects and their own influence out of view, and to appear solely attentive to the convenience and pleasure of others. In a light nearly similar we are to consider those forms in the languages of modern Europe, originating in ceremony, by which single persons are addressed in the plural number.

Another question may here be asked, Why does this alleged brevity of the imperative not extend to the third person, and the plural number? Why are the words, *amato*, *amate*, *amatote*, and *amanto*, comparatively long? Would not this fact seem to intimate that the circumstance of being imperative does not of itself determine this brevity of form? To this we answer, that the word called the third person of the imperative, is not properly an imperative, as directed to the person addressed; it expresses either a simple wish, or specifies some *consequence* of an action which the speaker wishes him to perform. The command is then learned by inference, and not conveyed in the word. The imperative in the second person of the plural number is indeed, a real imperative; but it is to be observed, that it is not of so early natural origin as the imperative singular. It requires a particular arrangement to render it applicable. It implies not merely a wish that a certain action should be performed, but a knowledge that it is capable of being performed by a plurality of people, and that their concurrence in it will promote the same object, or fulfil a variety of objects that are alike desirable. Hence it probably deserves to be considered as equally remote from the original imperative with the other uses of the signs of locomotion.

Since then imperatives are not to be considered as contracted affirmations, it remains to inquire in what relation they stand to sentences of the latter kind. Whether these are originally two distinct species of sentences, merely agreeing in the general character which is common to all language, that of being intended to produce appropriate thoughts in the person addressed?

In tracing the nature and origin of human language, it appears to us, on the whole, most strictly agreeable to the natural history of our species, to consider all language as IMPERATIVE; that is, as always implying the imperative of a verb.

Even when we merely mention an object by making use of a noun, an imperative is implied, desiring the person addressed to think of it. Some more particular intentions on the part of the speaker may be left to be inferred from the occasion on which it is uttered, or may be expressed by some circumstances of manner, or conveyed by means of some further verbal sign: but the noun itself, in the moment of utterance, always implies the general act of demonstration, that is, the imperative of the verb "look," or "think."

Assertions may be advantageously reduced to the imperative form, and may be considered as originally and essentially partaking of that character. Imperatives, we have remarked, are deprived of their characteristic animation when reduced to assertions. Assertions, on the contrary, preserve more completely that interest which originally belongs to them, when viewed as imperative directions for regulating the volitions and active thoughts of others. Our opinions proceed from impelling causes which bear a resemblance in their nature to the motives which prompt us to action, and assertions resemble the exhibition of such motives to other persons.

But if each single word possesses an imperative power, it may be asked, in what respects that power can be ascribed to the copula "is?"—When the intention of assertions is considered, this copula will be found equivalent to the imperative of the verb "believe." An opinion asserted by means of it does not retain the simple character of one which remains quiescent. Hence it is always expected to be of a nature fitted to interest the person addressed, and possessing a just claim on his attention. Without this, the declaration is regarded as unmeaning. Keeping this circumstance in view, we shall find nothing forced or exaggerated in representing the "is," in English as equivalent to "believe," and the *est* in Latin to *crede*.

When sentences constructed by means of this copula are not intended for conveying information but for exhibiting pleasing objects already known, or objects of imagination, as in poetic description or fictitious narrative, the copula has the power of the imperative "contemplate."

One objection might be made to this theory, that *est* being placed betwixt two nominatives, cannot be equivalent to a word which governs nouns in the accusative. If such an objection should occur, it is sufficient to observe that the cases of nouns are refinements of language, intended for marking in a convenient manner certain uses of the words, and certain analogous connections which are formed among them in the composition of sentences, but

that our present inquiries relate to a period of language much earlier than such contrivances; and, where the meaning can be shewn to be the same, diversities arising from these causes do not fall under our consideration.

It might, however, be objected to the whole reasoning here employed, that, if all sentences appear to be imperatives, there is no meaning in supposing those words which are usually called imperatives of verbs to be the earliest parts of speech, and in deriving from that consideration the brevity of their form. These particularities should at least imply that they differ from other imperatives. The nature and consequences of this difference require therefore to be pointed out. When we use the imperative of a verb of action, the name of the act expresses our ultimate wish, viz. the wish that the person addressed should perform it. Its name is originally contrived for this particular purpose. When we use it for other purposes, these require to be stated; and even the mere absence of the imperative use is denoted by the additional signs which we have already mentioned as distinguishing the infinitive of the verb. When we direct a person to think of objects of other kinds, each object may admit of being expressed by a very brief sign. But, for the most part, various circumstances require to be specified. Our intentions respecting any object admit of considerable latitude, and are to be particularized on each occasion by the indication of a connection betwixt that object and some others, or betwixt it and some voluntary effort which we dictate to the individual addressed. These relations being various, require signs to distinguish them; and these signs, being generally in the form of terminations, give rise to the greater length of the words. But even in those instances in which the word used for an imperative suffers no change in its form when converted into a noun or any different part of speech, it cannot like an imperative, stand alone to form a sentence. Though not lengthened by the addition of a syllable, it requires to be accompanied by some other word.

We have maintained that every noun implies an imperative act of demonstration, or a call for attention; but it may be objected, that, as this is necessary to all language, and does not serve to distinguish one word from another, it cannot be said to be contained in the word, though implied in the act of speaking. Speech may have an imperative character, and yet it may not follow that its materials consist of imperatives alone. The names of surrounding objects may not be necessarily considered as expressive of different imperative acts, like the imperatives of different verbs. When we resolved the copula "is" into an imperative, this, perhaps, appeared an excessive refinement, and a strained attempt to give exclusive support to a particular system. It may appear sufficient for the support of our fundamental theory, to keep in mind that a note of attention is implied in the act of speaking. If these views seem to our scientific readers more just than those which have been here suggested, we shall not, on so abstruse and so nice a point, urge any farther argument, but leave the preceding observations to their deliberate reflections. We have endeavoured to make as near an approach as possible to the formation of a general theory on the nature of sentences. But the views which we have given are not all essential to those that are to follow. The latter will, we hope, exhibit evidences of their own, independently of the consent of our readers to give to those contained in the present Chapter, a strict application in every particular to the parts of speech.

Language must be regarded by all as an instrument by which we direct the thoughts of one another. It has thus an undoubted imperative character, and this character receives subordinate variations, depending on the mutual relations of the speaker and the person addressed, with reference to the subject upon which it is employed. It includes four forms of influence, which have been already alluded to, and shall now be enumerated. 1st, We influence one another to exert the powers of voluntary motion. This gives rise to *Imperatives* in their acknowledged form. 2d, We direct the attention of one another to all the varieties of objects already mutually known. This gives occasion to the contrivance of *Names* to represent them. 3d, We influence one another's opinions and state of knowledge. This gives rise to the words which are particularly subservient to *Assertion*. 4th, We influence one another to communicate specific information. This gives rise to *Interrogatives*.

Though we have already given some account of the differences of words as subservient to these different uses, there are many varieties, as well as many analogies of form and use among them, which have not come under our consideration. The analysis of these will throw light on the general faculty of speech, and will furnish some rules for preserving us from mistakes in language, and from mistakes of greater importance regarding the diversified subjects to which language is applied. The remaining Chapters of this article will be occupied in investigating the differences which are commonly considered as constituting the different parts of speech. [*To be Continued.*]

GEOGRAPHICAL DEPARTMENT.

Continued from page 11.

The first authentic account that we have of any

considerable portion of the earth's surface, is derived from the writings of Moses. The object of that writer, indeed, was not to teach men a system of geography; and therefore the information which he affords regards the earth, considered rather as the habitation of moral beings, than as the subject of physical research. We learn, however, from his writings, that, 1700 years before Christ, a commercial intercourse subsisted between the Midianites, who inhabited the country on the northern extremity of the Persian Gulf, and Egypt, by way of Palestine. From that period, till within 500 years of the Christian era, the Hebrew writings make frequent allusions to the commerce of eastern countries, and it is probable that the Phœnicians were at this time acquainted with many countries, particularly to the west, of which history makes no mention. The geography of the Hebrews themselves, however, does not appear to have extended, at this period, beyond Mount Caucasus to the north, the entrance of the Red Sea to the south and the Archipelago to the west, including the countries of Asia Minor, Armenia, Assyria, and Arabia in Asia, with Egypt, and a little of Abyssinia in Africa. The Greeks, about the same period, reckoning Delphi the centre of the habitable world, were acquainted with little more than the country included under the name of Greece, together with the islands in the Archipelago, the western part of Asia Minor, the sea-coast of Egypt and Lybia in Africa, and a little of the south of Italy. Beyond this circle all was involved in darkness and conjecture. With regard to the Egyptians, with whom it has been supposed that the science of geography originated, there are no authenticated facts to show, that they had ever been distingnished for enterprise or adventure, previous to the period of which we are speaking, still less that they had ever led the way in geographical discoveries. From the peculiar circumstances of their situation, they must have been obliged, at an early period, to apply themselves to topography, as they did to geometry; but there is every reason to believe that, for their knowledge of foreign countries, they were indebted to the Phœnicians and others who visited them for the purpose of commerce.

Such was the condition of the most enlightened nations of the world with regard to geographical knowledge, at the commencement of the fifth century, before the birth of Christ. In the course of the next seventy years, however, many interesting and important discoveries were made by the Greeks. Colonies of that people, either driven from their native country by intestine commotion, or induced by the prospect of wealth to go in quest of new settlements, successively established themselves in Sicily, Sardinia, Corsica, and even some of the southern provinces of Spain. For their success in these enterprises, they are said to have been greatly indebted to the geographical and nautical charts which they contrived to obtain from the Phœnicians, and which, with the sphere alledged to have been constructed by Anaximander the Milesian, and disciple of Thales, were the first attempts of which we have any authentic information, towards delineating the whole, or any considerable portion of the earth's surface. But whatever might have been the merits of Anaximander's globe, or of the Phœnician maps, it is certain that the Greeks had not borrowed from either, any correct notions with regard to the figure of the earth. It was reserved for Herodotus to contradict, from his own personal observations, the idea of the habitable world being a circular plane, surrounded by the *river Ocean*. This distinguished writer, who has been styled the father of history, and who, as an attentive and intelligent traveller, has never been surpassed, perhaps seldom equalled by any, either in ancient or modern times, was a native of Halicarnassus, in lesser Asia. Imbibing, in all probability, thatspirit of commercial enterprise for which his countrymen were distinguished, and possessing confidence in himself sufficient to raise him above vulgar prejudices, and opinions not founded in facts, he pushed his researches into many countries, which till that time had never been explored. He visited the Greek colonies on the Black Sea, and measured the extent of the latter from the Bosphorus and the mouth of the Phasis at the eastern extremity. He traversed the country between the Borysthenes and Hypanis, now a part of southern Russia, explored the coasts of the Palus Mœotis, (sea of Azof) and obtained correct information with regard to the situation and extent of the Caspian Sea. He visited Babylon and Suza, and was well acquainted with the greater part of the Persian monarchy. He travelled through the whole of Egypt, where he obtained a great deal of interesting information respecting the caravans from the interior of Africa, and also visited the Grecian colonies of Cyrene. From his description of the straits of Thermopylæ, it is obvious that he had been in Greece, and he traced the course of the Ister (Danube,) from its mouth almost to its source. He terminated this career of discovery and adventure, as useful to others as honourable to himself, in the southern part of Italy, where it is also supposed that he finished his much admired history.

In estimating the extent of the geographical information furnished by Herodotus, we are by no means to limit it to the circle which he described, and which we have just traced out. Possessing in an eminent degree those qualifications which distinguish the intelligent traveller from the mere tourist, he was enabled to collect much valuable information respecting countries which he had no opportunity of visiting; and the accounts which he gives of

these countries have been confirmed by the most unquestionable of all evidence, the striking similarity in the characteristic features of their ancient and modern inhabitants. Viewing it in this light, the geography of Herodotus extended to the greater part of Poland and European Russia, western Tartary, the country on the Indus from its source to the confines of the Cashmere, Arabia, and the northern parts of Africa. He sometimes mentions Carthage, and gives an account of a traffic carried on without the intervention of language, between the Carthaginians and a nation beyond the Pillars of Hercules, which has been considered as applicable to that of Senegambia. There is nothing explicit, however, in the text of Herodotus, with regard either to the name or the situation of the country.

Before concluding this short review of the travels of our author, it may not be improper to notice the information which he gives, or is supposed to give, on three subjects, which still continue to agitate the scientific world, we mean the Niger, the Nile, and the pretended circum-navigation of Africa by the Phœnicians. With regard to the Niger, the only passage in Herodotus that can possibly allude to this river, is the account which he gives on the authority of Etearchus, king of the Ammoneans, of a journey into the interior of Africa, undertaken by five young Nasamons, a people situated at the extremity of the Gulph of Sydra. These travellers having, in the first part of their journey, passed through an inhabited country, came to an immense sandy desert, through which they continued their route westward, till they reached an extensive plain covered with vegetation. While they were enjoying the shade, and eating the fruit of the trees which they found there, they were fallen upon by men of a very diminutive size, who conducted them across a swampy country, till they came to a town inhabited by black people, and situated on the bank of a large river, running from west to east. Though the vague and indefinite nature of the account itself, the authority on which it rests, and the circumstance of its being obviously introduced for the purpose of proving that the Nile runs from the west, tend to throw considerable doubts on the truth, or at least the accuracy of this relation, yet some eminent geographers are of opinion, that the town mentioned above is no other than Tombuctoo, on the banks of the Niger.

To be Continued.

ARITHMETICAL AND MATHEMATICAL DEPARTMENT.

Continued from page 16.

ARITHMETIC.

The object of Arithmetic is to explain the various methods of computing numerically. It is called an Art when it only teaches the method of working by numbers, and is honoured with the name of a science, when it is used in demonstrating the reasons of these practical operations.—Our first ideas of number are acquired during childhood; for there is no idea more simple than that of unity or one. As soon as the understanding of a child begins to unfold itself, he can by viewing his hand, obtain an idea of one and advance to five and ten. By repeating the idea of unity, and continually adding one to the former sum, he arrives at the knowledge of the higher numbers.

The idea of a unit, though very simple, is perhaps of the negative kind, as it implies the knowledge of plurality, and is not attended to till that is obtained. As we proceed from lower to higher numbers, we soon perceive that there is no limit to our progress, for whatever quantity is obtained, it may be increased, at least in imagination, so that no assignable bounds can be set to the augmentation of numbers. This idea of numbers, at first, acquired by means of sensible objects, is afterwards extended to the affections of mind and immaterial qualities. As our senses are confined to the number of objects which can be perceived at one time, so our ideas of large numbers are formed with difficulty, and attended with confusion, and the farther we progress, the greater is the difficulty. This has induced a systematic arrangement; for without the division of numbers into classes, it would be impossible to form an idea of a large number. But by such a division, and giving appropriate names to each, we surmount many of the obstacles that impede our progress. It is no doubt, owing to the want of this arrangement, and the paucity of language, amongst many of the American tribes, that some of them cannot count more than three or five. When they would convey an idea of a number greater, than these, they point to the hairs of their head, or with wonder, declare it so great, that it cannot be *computed*.

The method of arranging numbers into periods of *ten* each, has been adopted by the Hebrews, Greeks, Arabians, Romans, and by all nations, if we except the Chinese, and an obscure tribe mentioned by Aristotle. This can be attributed to nothing else so reasonably, as to the habit we acquire in childhood of counting by our fingers. Ten units are supposed to form a class of the lowest kind; ten of these, one of the next higher, and superior classes are generated by an accumulation of inferior ones. This renders our progress easy, and our ideas definite. A more convenient scale, than the decimal, might be substituted, but the principles are incapable of simplification. Thus, if eight were the scale, 6 times 3 would be two classes, and two units or 22; and if 12 were assumed, 5 times 9 would be three classes, and nine units or 39. It may be observed, however, that whatever number of units makes a class, the same number of each class should make one of the next

higher. This is true with respect to our system of Arithmetic; ten being the universal scale. And it is to be regretted, that our system of weights and measures, is not regulated in the same manner, as a great deal of the difficulty, in the practical part of our Arithmetic, arises from this irregularity.

It is not easy to ascertain who first invented Arithmetic, or to whom we are indebted for its earliest improvements. The ingenious system, which we and all the moderns employ, was obtained immediately from the Arabs, though, it is probable, that they learned it from the inhabitants of India. It must be acknowledged, that this scheme has the advantages of clearness and simplicity over all those that have preceded it. The celebrated Gerbert, who was eminently skilled in Mathematics, and raised by the interest of Otho to the papal chair, went to Spain, when it was under the dominion of the Arabs, to study Arithmetic, and after his return, about 960 after Christ, diffused the knowledge of it over Europe.

The history of Arithmetic is enveloped in darkness and uncertainty. The first steps of the human mind are feeble and slow, and excite, in a small degree, the attention of future ages. The little, that we find in ancient history, with respect to the progress of science and the arts, renders it very difficult, if not impossible, to assign to any particular age or person the invention of this science.

The Phœnicians, we know, were the first who were extensively and generally engaged in commercial pursuits. And as Arithmetic is not only useful, but indispensibly necessary in the practice of commerce, it has been said that these people were the first inventors of the art. Strabo, who flourished during the reign of Augustus, mentions this opinion, as being prevalent in his time. And if we may place confidence in Cedrenus a cotemporary historian, Phœnix, the son of Agenor, wrote the first treatise on Arithmetic in the Phœnician language. But these opinions are not entitled to unlimited credit. For althoughit it may be admitted, that they extended the knowledge and practice of this subject, yet there can be little doubt, that the Egyptians were well acquainted with it before their time. And as human intelligence appeared to them to be insufficient to an invention so useful, they piously ascribed it to the Gods, and thought that it was by them communicated to men. It was at least, the general opinion according to Socrates or Plato that Theut or Thoth was the inventor of numbers and of geometry, and it is very Probable, that from this, the Greeks have taken the idea of giving to their Mercury (between whom and the Thoth of the Egyptians, there is a marked relation,) the care and superintendence of commerce and arithmetic. It is very difficult not to associate with these the Chaldeans. For since, with this people, the first traces of astronomical knowledge was found, it is necessary, that they should, have been acquainted with Arithmetic, and, even in an advanced state of improvement. For how could they, without its assistance, attain to the discovery of astronomical periods with which history informs us they were well acquainted?

Mathematical Science was but partially known throughout Greeec, when *Thales*, ranked as one of its Seven wise men, made his appearance. By the energy of his character, he gave to it an impulse, in consequence of which we may consider his time as forming a remarkable era in its progress. He was the first who observed the apparent diameter of the Sun, divided the year into 365 days, and determined the height of the Egyptian pyramids by means of their shadows, projected on the horizontal plane. These evince, that he was well acquainted with the Astronomy, Geometry and Arithmetic of his time; as to those he principally directed his attention.

After travelling for a considerable time in Egypt and India he returned to his native city Miletus. Here, he founded the Ionian School, so justly celebrated for fostering every part of Philosophy and spreading its doctrines through many of the Grecian States. It was in this school that Pythagoras who was a cotemporary with Thales laid the foundation of his Philosophical opinions. His countrymen were induced to believe, that he would one day arrive at the highest degree of eminence, and asserted that he was a good genius, sent into the world, for the benefit of mankind. In the indulgence of these hopes, they were not disappointed; no ancient philosopher has laid the world under greater obligations. It is well ascertained, that, in order to become acquainted with science and scientific men, he left Samos, the place where he received the first elements of his education, and visited Miletus, Phœnicia and Egypt. In this last country he remained upwards of twenty years. And as to the most ardent love of glory, he joined the most persevering industry, he acquired much important and valuable information. After this, he went to India, and while there, among other objects of attention, he did not overlook the science of Arithmetic. It is to him the Multiplication table, sometimes called the Pythagorean, is attributed, and it is supposed with considerable reason, that he brought from thence the ordinal characters now used in Arithmetical computations. However plausible this conjecture may be, there is no evidence, that they ever were generally used in Greece. It may be, that Pythagoras and his disciples were not apprised of their extensive utility, or might not be willing, that they should be known to the vulgar. The combination of numbers was much attended to by Pythagoras. And as he imitated the Egyptians by using the symbolical style in communicating the most important truths, it may be hence that some authors attribute to him the ancient Kabbala. Whatever truth there may be in this supposition it is well known, that he swore by nothing but the number four, as he called this the number of numbers. In *three* also, he imagined several marvellous properties, and said

that a man well skilled in Arithmetic, possessed the sovereign good, that the nature of numbers pervaded the universe, and the knowledge of them was the knowledge of the Deity. With regard to these fancies being attributed to this eminent philosopher with justice, we may be permitted to doubt; especially when we are informed, that his writings were for a long time confined to his own family, and that some time after his death Plato and some other of his disciples, committed them to writing, when they might be corrrupted by uncer tain tradition.

It is not possible to trace through the dark ages the progress of Arithmetic. But we are sure it advanced with celerity, as the first of the sciences and key to all the others. The ancients were not only well acquainted with Addition, Subtraction, Multiplication and Division, but had methods of extracting the Square and Cube roots, and understood the theory of proportions and Arithmetical and Geometrical Progression.

Eratosthenes, a learned Greek philosopher of Cyrene, and librarian of the Alexandrian Museum, invented a method by means, of what is called his sieve, of determining the Prime Numbers, the envestigation of which is curious in itself, independent of its use in the theory of fractions. By prime numbers, every one knows, is meant those which can only be measured (or exactly divided without a remainder) by unity, or themselves as. 2, 3, 5, 7, 11, 13, 17, 19, &c. In the series of *even* numbers 2 is the only *prime*, therefore the others must be found among the odd ones. In order to discover these, Eratosthenes wrote on a thin board, or which will answer equally as well, a sheet of paper, the series of odd numbers, and then under every third, fifth, seventh, &c. of these numbers, he made a perforation in the board or paper, through which he supposed the numbers above to fall, and, those remaining, would be primes.

[*To be Continued.*]

POETRY.

—

TO GENIUS.

Thou child of Nature, Genius strong,
Thou master of the poet's song,
Before whose light, art's dim and feeble ray
Gleams like the taper in the blaze of day;
Thou lov'st to steal along the secret shade,
Where fancy, bright aerial maid!
Awaits thee with her thousand charms,
And revels in thy wanton arms;
She to thy bed in days of yore,
The sweetly warbling Sakespeare bore;
Whom every muse endow'd with every skill,
And dipt him in that sacred rill,
Whose silver streams flow musical along,
Where Phœbus, hallow'd mount resounds with raptur'd song.

Forsake not thou the vocal choir,
Their breasts revisit it with thy genial fire,
Else vain the studied sounds of mimic art,
Tickle the ear, but come not to the heart.
Vain every phrase in curious order set,
On eachside leaning on the (stop-gap) epithet,
Vain the quick rhyme still tinkling in the close,
While pure description shines in measur'd prose.
Thou bear'st aloft, and look'st with high disdain,
Upon the dull Mechanic train;
Whose nervous strains flag on in languid tone,
Lifeless and lumpish as the bagpipe's drowsy drone.

No longer now thy altars blaze,
No poet offers up his lays;
Inspir'd with energy divine,
To worship at thy sacred shrine,
Since Taste* with absolute domain,
Extending wide her leaden reign
Kills with her melancholy shade,
The blooming scions of fair Fancy's tree;
Which erst full wantonly have stray'd
In many a wreath of richest poesy.
For when the oak denies her stay,
The creeping ivy winds her humble way;
No more she twists her branches round,
But drags her feeble stem along the barren ground.

Where shall exil'd genius go?
Since only those the laurel claim,
And boast them of the poet's name,
Whose sober rhymes in even tenour flow;
Who prey on words, and all their flowerets cull,
Coldly correct and regularly dull.
Why sleep the sons of genius now?
Why, Wartons, rests the lyre unstrung?
And thou† bless'd bard! around whose sacred brow
Great Pindar's delegated wreath is hung,
Arise and snatch the majesty of song
From Dulness' servile tribe, and Art's unhallow'd throng.

—

TO FANCY.

Thou Queen of shadows!—shall I still invoke,
Still love the scenes thy sportive pencil drew,
When on mine eyes the early radiance broke
Which shew'd the beauteous, rather than the true
Alas! long since, those g'owing tints are dead,
And now 'tis thine in darkest hues to dress
The spot where pale experience hangs her head
O'er the sad grave of murder'd happiness!
Thro' thy false medium then, no longer'd view'd,

* By taste, is here meant the modern affectation of it.
† Dr. Akenside.

May fancied pain and fancied pleasure fly,
And I, as from me all thy dreams depart,
Be to my wayward destiny subdu'd;
Nor seek perfection with a poet's eye,
Nor suffer anguish with a poet's heart.

ODE ON CLASSICAL EDUCATION.*

Down the deep abrupt of hills
Furious foams the headlong tide,
Through the meads the streamlet trills,
Swelling slow in gentle pride.
Ruin vast and dread dismay
Mark the clam'rous cataracts way,
Glad increase and sweets benign
Round the riv'lets margin shine.

Youth! with steadfast eye pursue
Scenes to lesson thee display'd;
Yes! in these the moral muse
Bids thee see thyself pourtray'd.
Thou with headstrong wasteful force
May'st reflect the torrent's course;
Or resemble streams, that flow
Blest and blessing as they go.

Infant sense to all our kind,
Pure the young ideas brings,
From within the fountain mind
Issuing at a thousand springs.
Who shall make the current stray,
Smooth along the channel'd way?
Who shall, as it runs, refine
Who? but Classic Discipline.

She, whatever fond desire,
Stubborn deed or guileful speech,
Inexperience might inspire,
Or absurd indulgence teach,
Timely cautious shall restrain,
Bidding childhood hear* the rein;
She with sport shall labour mix,
She excursive fancy fix.

Prime support of learned lore,
Perseverance joins her train;
Pages oft turned o'er and o'er
Turning o'er and o'er again;
Giving, in due form of school,
Speech its measure, pow'r, and rule;
Meanwhile memory's treasures grow,
Great, though gradual; sure, though slow.

Patient Care by just degrees
Word and image learns to class;
Those compounds, and sep'rates these,
As in strict review they pass;
Joins, as various features strike,
Fit to fit, and like to like,
Till in much array advance
Concord, Method, Elegance.

Time meanwhile, from day to day,
Fixes deeper Virtue's root;
Whence in long succession gay,
Blossoms many a lively shoot:
Meek obedience, following still,
Frank and glad, a Master's will:
Modest Candour, hearing prone
Any judgment save its own:

Emulation, whose keen eye
Forward still and forward strains,
Nothing ever deeming high
While a higher hope remains:
Shame ingenuous, native, free
Source of conscious dignity;
Zeal impartial to pursue
Right and just, and good and true.

These and ev'ry kindred grace
More and more perfection gain
While attention toils to trace
Grave record or lofty strain;
Learning how, in Virtue's pride,
Sages liv'd or heroes died;
Marking how, in Virtue's cause
Genius gave and won applause.

Thus with early culture blest,
Thus to early rule inured,
Infancy's expanding breast
Glows with sense and pow'rs matured.
Whence, if future merit raise
Private love or public praise,
Thine is all the work—be thine
The glory—Classic Discipline.

* Spoken in the year 1794, at the annual visitation of Dr. Knox's school at Tunbridge.

† Audit currus habenas, VIRGIL.

TO CORRESPONDENTS.

"ASCHAM" is received and shall have a place.—We are glad to find that individual as well as public attention is awakened, and that a spirit is manifested to a considerable extent for reorganizing our places of education, dismissing unqualified instructors, and employing those, who will do honour to the profession and subserve the best interests of the rising age.

"STRICTURES ON LANCASTER'S SYSTEM OF INSTRUCTION" came too late for this number. The writer has done justice to the subject.

An abstract of the doings of the Legislature of Virginia, relative to establishing a general and systematic course of education throughout the state, and a syllabus of the best mode of instruction, will be given in our next.